1. Please provide an overview of how the Major Market System operates, and explain how the reporting systems used by Core Aggregation Transportation (CAT), Customer Contract System (CCS), and Specialized Customer Billing System (SCBS) fit into the overall system.

Utilities Response 1:

Our Major Market System consists of three separate in house developed applications, CAT, CCS and SCBS. These applications allow us to capture the special billing conditions needed to bill noncore and some complex core accounts and also to automate some of the steps of the billing process.

The CAT application is used to enroll and terminate SoCalGas customers with a Core Transport Agent (CTA). In addition to establishing the correct billing rates for the end use account to bill by our core CIS (Customer Information System), it is also used to report on the usage of the CTA customers back to the CTA and is used to support the billing of charges for the CTA. CAT interfaces with the Customer Information System(CIS), but not CCS or SCBS.

CCS is the application used to capture all the contract terms necessary to bill noncore customers and other customers needing special handling. It is also used to generate all the agreements (contracts) required for noncore service such as the Master Services Contract, Transporation Services Agreement, Marketer Contract and contracts for the various Storage programs. The contract data is used by SCBS to generate bills each month. CCS interfaces with CIS, SCBS, and Envoy (used to schedule gas onto the SoCalGas pipelines).

SCBS is the billing system used to bill noncore customers and core customers with special conditions for matching usage with correct applicable rate schedules and to reconcile customer gas usage with their delivered gas supplies for compliance with balancing requirements and charges. It uses information from CCS, CIS, Envoy, and MCS (Measurement Collection System) to generate a monthly bill for each customer.

2. Regarding the Major Markets Systems Enhancement project, SoCalGas states that, "The current technologies including Java, Web Logic and JReport Server are out-of-support." (SCG-19-R at MHB-69).

>   a. Please define the phrase "out-of-support" as it is used throughout SoCalGas testimony.

>   b. If support for the current technologies still exists, but is in some way more difficult or costly to obtain than before, please explain to what degree support must be reduced before SoCalGas will classify the technology as "out-of-support"?

Utilities Response 2:

a. The technologies used are no longer supported by the vendor.

b. If the technology vendor, that supports the software utilized by a SoCalGas system, has declared that the software will no longer be supported, then SoCalGas will classify the technology as "out-of-support".

3. Regarding the Major Markets Systems Enhancement project, SoCalGas states that, "Maintaining the current system has become more difficult as it is more costly to respond to business needs and regulatory mandates for non-core customers and system balancing rules for gas suppliers." (SCG-19-R at MHB-69).

>   a. Explain how SoCalGas quantifies how much "more difficult" maintaining the current system has become.

>   b. Explain how much "more costly" it has become for SoCalGas "to respond to business needs and regulatory mandates for non-core customers and system balancing rules for gas suppliers"

>   c. For each year since 2012, describe the instances where SoCalGas had "to respond to business needs and regulatory mandates for non-core customers and system balancing rules for gas suppliers". Include how long it took SoCalGas to complete its response, and the cost to respond in each instance.

Utilities Response 3:

a. The Major Market System is over eighteen years old. As business rules changed over time, systems changes were made to accommodate those business rule changes. Our tariffs require us to maintain at least three years of prior period data and associated billing rules. However, the system was not architected with the ability to manage different versions of the same rule. In essence new rules don't replace older ones but are rather added as new sets. As such, there are more and more rules to maintain over time as all rules must still be operational.

b. As mentioned above, new mandates not only require us to add new logic (rules) to the system, we need to ensure that this new logic does not conflict or otherwise affect the ability to render a bill in a previous versions of our rules. The more rules we keep in place, the more complex it is to make changes to the system. Given the nature of how the system is built, we must integrate new rules with all past rules, and we cannot quantify the impact of this incremental complexity.

Utilities Response 3 Continued:

c. SoCalGas objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure as it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is likely reasonably calculated to lead to the discovery of admissible evidence, and on the grounds that the burden, expense and intrusiveness of this request outweighs the likelihood that the information sought will lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objection, SoCalGas responds as follows:

 SoCalGas implements many enhancements to the Major Markets Systems in a typical year ranging from a few hours to several months' worth of work. SoCalGas does not maintain a log reflecting the time or costs of these enhancements.

4. Regarding the Major Markets Systems Enhancement project, SoCalGas states that, "Timeliness of non-core customer bills and notification of imbalances for gas suppliers will be impacted without support of additional technologies." (SCG-19-R at MHB-69).

> a. Explain how SoCalGas quantifies the impact on timeliness of bills and notifications without additional technology.

> b. For each year since 2012, describe each instance where SoCalGas failed to provide non-core customer bills and notifications of imbalances for gas suppliers in a timely fashion.

Utilities Response 4:

a. SoCalGas strives to bill all customers as soon as the necessary data such as a billing read is received. SoCalGas uses the bill to also generate the notice of imbalances for gas suppliers. SoCalGas relies on technology to validate and help automate some of the steps necessary to generate bills and notifications. As described in our response to Question 3, maintaining the system in the current technology and being able to keep the current level of automation and timeliness is becoming increasingly difficult.

b. Refer to the response to Question 4a. SoCalGas has not failed to provide timely bills and notifications to our noncore customers.

5. SoCalGas states that the large Excel-style spreadsheet that is used for Major Market Billing charges calculations "has become increasingly difficult to maintain, manage, test, and audit". (SCG-19-R at MHB-69).

   a. Explain how SoCalGas quantifies the increasing difficulty to maintain, manage, test, and audit the spreadsheet.

   b. In each year since 2012, how much time was required to maintain, manage, test, and audit the spreadsheet?

   c. What is the estimated time and cost that will be required to maintain, manage, test, and audit the proposed upgraded system?

Utilities Response 5:

a. Past and present rules are captured in this excel-style spreadsheet engine (eSpreadsheet). Over time, more and more rules are added to the spreadsheet. As in an Excel spreadsheet, a cell can be referenced in many other cells which may or may not have simple to complex formulas. As we add new rules, more and more cells and formulas are created, resulting in more and more said references. The current state is thousands of cells with varying degrees of formulas and complex cell references.

b. We do not track time at this system component level.

c. We do not track time or cost at this system component level and are unable to provide an estimate for the future upgraded system.

6. SoCalGas states that the current Excel bill engine used for Major Market Billing "is cumbersome and inflexible. A new bill engine is needed to sustain the integrity, maintainability, accuracy, auditability, and provide agility/flexibility to quickly respond to future business and regulatory needs". (SCG-19-R at MHB-69).

> a. Explain how SoCalGas determines when a system has become "cumbersome and inflexible"?

> b. For each year since 2012, describe the instances when SoCalGas was unable to sustain the integrity, maintainability, accuracy, auditability, or provide agility/flexibility of the current bill engine. Also explain any costs that SoCalGa

Utilities Response 6:

a. See the response provide to Question 5a.

b. As previously stated, SoCalGas has been able to maintain the integrity of the system, despite the increasing complexity. Costs incurred in excess of normal operational expenses were not tracked.

7. Explain why it is that many of the rules embedded within the large Excel-style spread sheet used for Major Market billing calculations are "undocumented and not fully understood" (SCG-26-CWP at 156).

Utilities Response 7:

SoCalGas objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure as it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is likely reasonably calculated to lead to the discovery of admissible evidence, and on the grounds that the burden, expense and intrusiveness of this request outweighs the likelihood that the information sought will lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objection, SoCalGas responds as follows:

Formulas within a cell are documented in the sense that they are themselves written within the spreadsheet. However, as mentioned in response to Question 5a, over the years, as we use more cells in the spreadsheet, with increasing references, it has become difficult and time consuming to trace the references for a particular rule.

8. SoCalGas states that, "The reporting systems used by CAT, Customer Contracts System (CCS) and SCBS applications need to be upgraded" (SCG-19-R at MHB-69), but does not provide further explanation.

      a. When was the last time the CAT, CCS, and SCBS applications were upgraded? What was the cost for those upgrades?

      b. For each year since 2012, describe any recorded instances of failure of these systems to perform as needed. Include any costs in excess of normal operational expenses incurred as a result of such failures.

      c. How much time and cost is required to use the current system? What is the estimated time and cost to use the proposed upgraded system?

Utilities Response 8:

a. The last software version upgrade was in 2010, and was part of a larger effort to bring all Java based systems up to date. Cost attributed specifically to CAT, CCS, and SCBS applications was not tracked.

b. As previously stated, SoCalGas has been able to maintain the integrity of the system, despite the increasing complexity.

c. System usage varies day by day, and is not tracked.

9. SoCalGas states that the Major Markets Modernization project will "future proof our billing processes by moving eSpreadsheet Bill engine rules into something more maintainable and understandable by business and IT teams" (SCG-26-CWP at 157).

   a. Is the eSpreadsheet Bill engine the same as the "large Excel-style spreadsheet" used for Major Market Billing referred to in SCG-19-R, MHN-69? If not, please provide additional explanation as to what the eSpreadsheet bill is, what it is used for, and how it differs from the Major Market Billing Excel-style spreadsheet.

   b. SCG states that the eSpreadsheet Bill engine contains "a lot of billing rules [that] are undocumented and not fully understood" (SCG-26-CWP at 157). Explain why a lot of the billing rules are undocumented and not fully understood.

Utilities Response 9:

a: Yes, they are the same.

b: See response to Question 7.

10. What specific technology or software has SoCalGas selected to use for the Major Market
Systems Enhancement project? What were other alternatives that were also viable, and
how did SoCalGas make their final selection?

Utilities Response 10:

No technology selection has been made yet for the systems enhancement project.

11. If SoCalGas has not selected a specific technology or software to use for the Major Market Systems Enhancement project, how did SoCalGas develop their cost forecast?

Utilities Response 11:

SoCalGas developed its cost forcast for the requested Major Markets Enhancement project by consulting internal and external subject matter experts and IT vendors with expertise in this area for estimated project costs.

12. SCG estimates that "By using a rules engine, the time taken to build the logic related to a charge [sic] is expected to reduce by more than ~50%" (SCG-26-CWP at 157).

 a. Please explain what is meant by the phrase "build the logic related to a charge [or change]", and the general steps involved in the process.

 b. Explain how using a rules engine will reduce the time taken to build the logic related to a charge (or change) by approximately 50%.

 c. Explain the difference between "Excel related changes", "Java specific changes", and any other type of common changes in the eSpreadsheet Bill engine that can be completed in less time with a rules engine.

 d. For each year since 2012, please provide the number of Excel related changes, Java specific changes, and other common changes made to the eSpreadsheet bill engine, and the time and cost required to make each change.

Utilities Response 12:

a. The calculation of charges involves a series of rules, as described in response to Question 5a.

b. Rules in a rules engine are self-contained and isolated, unlike a single spreadsheet that has thousands of cells that reference one another. A rule would be loosely coupled to the over-all system and provides the flexibility to be activated and de-activated based on business needs.

c. Both eSpreadsheet and Java changes require programmers to make changes and go through the entire software life-cycle on requirement/design/test/deploy for the entire application. Rule Engine has the capability to provide configurable parameters for business to modify and/or add specific rules with much less coding.

d. SoCalGas objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure as it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is likely reasonably calculated to lead to the discovery of admissible evidence, and on the grounds that the burden, expense and intrusiveness of this request outweighs the likelihood that the information sought will lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objection, SoCalGas responds as follows:

 We do not track time or cost at this component level.

13. SoCalGas assumed 3 incidents per year of delays in billing, which could require billing analysts and IT experts to work additional days to address. (SCG-26-CWP).

  a. How did SoCalGas arrive at the estimated 3 incidents per year of delays in billing?

  b. How many actual incidents of delays in billing occurred each year since 2012?

  c. For each actual incident of delay in billing since 2012, what was the estimated cost incurred as a result, beyond normal operating expenses?

Utilities Response 13:

SoCalGas objects to this request pursuant to Rule 10.1 of the Commission's Rules of Practice and Procedure on the grounds that it is vague and ambiguous. Subject to and without waiving the foregoing objection SoCalGas responds as follows referring to Ex. SCG-26-CWP at page 157:

  a: Assumption is based on staff experience.

  b: See response to Question 4.

  c: There are no costs to SoCalGas beyond normal operating expenses.

14. For each year since 2012, describe any instances where the current Major Market billing system failed to accurately and timely bill SoCalGas' Major Market customers. Include the costs incurred as a result of each instance, beyond normal operating expenses.

Utilities Response 14:

See response to Question 4.

15. For the Major Market Systems Enhancements, SCG estimates a forecast cost of $4.323 million in 2018 and $8.646 million in 2019 (SCG-26-CWP at 156).

    a. Provide a breakdown of these forecast costs, and a description of each line item. Also indicate the estimated costs of each of the Major Markets Modernization items listed under "Physical Description" in SCG-26-CWP at 156.

    b. The "Description" section of the "Workpaper Sub Details" for the Major Markets System Enhancements workpapers (SCG-26-CWP at 160-162) states only "See workpaper description". Please explain what workpaper descriptions are being referred to, which provide a description of the forecast estimates.

    c. Please explain the difference between the 2018 forecasts provided in workpaper sub details for the Major Markets System Enhancements workpapers on page 160 and 162 in SCG-26-CWP.

Utilities Response 15:

    a.

Item Description	2018	2019
Billing and Rules Engine	$ 2,224	$ 4,037
Expand delivery options for customer bills		
eSpreadsheet Billing Engine retirement and conversion to flexible and maintainable billing engine		
Ability to update Rules related to the Charges without changing code		
Refactor system integrations and batch processing for billing engine replacement		
Platform Upgrades	$ 1,499	$ 2,367
JDK Upgrade from 1.8		
Weblogic migraiton to Tomcat		
Converting of 18 COBOL jobs to Java		
Refactoring 128 batch jobs		
Reporting	$ 250	$ 598
Add auditabilty to SCBS to track customer bill updates		
Jreport upgrade and rationalization of existing 154 reports		
Workflows	$ 350	$ 1,644
Developing a work queue process to enhance quality control		

Prioritizing and balancing work load to match billing analyst capacity		
Improving workflow related to exceptions/data coming from CCS, CIS		

etc

b. See SCG-26-CWP pp. 156-157

c. We are required to separately identify the portion of self-developed software costs for tax purposes.

16. Over the period of time that the SoCalGas Customer Information System has been in use (SCG-19-R at MHB-72), what upgrades, maintenance, or other modifications have been made to the system? Please provide a description for each activity, along with the corresponding date and cost of implementation.

Utilities Response 16:

SoCalGas objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure as it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is likely reasonably calculated to lead to the discovery of admissible evidence, and on the grounds that the burden, expense and intrusiveness of this request outweighs the likelihood that the information sought will lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objection, SoCalGas responds as follows:

There have been a vast number of upgrades and modifications to the Customer Information System since its inception 21 years ago, and ongoing maintenance as recommended or necessary. SoCalGas does not track all changes and corresponding costs to the Customer Information System.

17. In what way is the Customer Information System's current graphical user interface approaching obsolescence, and how does SoCalGas quantify the increasing difficulty to maintain and enhance it (SCG-19-R at MHB-72)?

Utilities Response 17:

SoCalGas objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure as it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is likely reasonably calculated to lead to the discovery of admissible evidence, and on the grounds that the burden, expense and intrusiveness of this request outweighs the likelihood that the information sought will lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objection, SoCalGas responds as follows:

The CIS Graphical User Interface front-end is the bridge that our business users (e.g. Customer Service Representatives, billing analysts, collection personnel, etc.) use to access core CIS functions to service our customers.

The current CIS graphical user interface was developed using the Smalltalk language more than 25 years ago. Since that time, IT industry investments have moved to development languages that are more suitable for browser based and mobile-friendly solutions. The development languages supporting graphical user interfaces (e.g., Java, .Net, JavaScript, C#, etc.) that have emerged over the last two decades provide a wide range of advances in offering more sophisticated frameworks and tools to support development activities.

The current Customer Information System architecture requires that a large amount of program modules (image) be loaded on each individual end-user desktop. This dated architectural approach does not allow the flexibility and portability provided by modern browser-oriented architectures.

The pool of available Smalltalk developers has significantly shrunk as projects and investments move to more browser and mobile-friendly development languages such as Java and .Net. For many years, SoCalGas has worked with multiple vendor partners searching for resources with Smalltalk software development skills and has not been successful in finding qualified candidates domestically or internationally.

18. How much money does SoCalGas estimate it will save from reduced operating and other associated costs by upgrading to new technology for the CIS Front-end Replacement project? Please explain how this estimate was calculated.

Utilities Response 18:

The frontend modernization is not aimed at immediate cost savings, but rather to move to a more current technology platform that allows us to conduct businesss more efficiently and effectively.

19. What specific technology has SoCalGas selected to replace the current Smalltalk architecture (e.g. Java, .Net, etc.)? What were other viable alternatives, and why was the selected technology ultimately selected?

Utilities Response 19:

SoCalGas is currently in the process of assessing technology options for a Smalltalk replacement system.

20. If SoCalGas has not selected a specific technology to replace the current Smalltalk architecture of their Customer Information System, how was the forecast estimate calculated?

Utilities Response 20:

SoCalGas consulted with internal and external subject matter experts, including a vendor specializing in Smalltalk conversions and developed an overall project estimate based on their experiences in converting systems with similar size and complexity as our code base and other development life cycle activities.

21. For each year since 2012, describe the "system enhancements" that have been necessary for the existing SoCalGas CIS (SCG-19-R at MHB-72). Include the cost and time required to complete each enhancement.

Utilities Response 21:

Please refer to the objection and response to Question 16.

22. Under the existing CIS, how many "system enhancements" are anticipated to be necessary over the next 5 years? With the proposed upgraded CIS, how many "system enhancements" are anticipated over the next 5 years?

Utilities Response 22:

The number of "system enhancements" anticipated to be necessary over the next five years is likely to be comparable to the current level of changes. This is true for the existing CIS as well as the proposed upgraded CIS as the number of business enchancements is not related to what language we use to develop the CIS front-end. The upgraded CIS will give us the ability to more efficiently and effectively respond to the need for future enhancements.

23. What are the estimated costs and time necessary to implement CIS system enhancements under the proposed upgraded system? Explain how these estimates were calculated.

Utilities Response 23:

SoCalGas is currently in the process of assessing technology options for an enhanced CIS system. Estimates of system enhancement cost and time necessary to implement such enhancements are not yet available.

24. What is the annual cost for ongoing application testing of the current CIS (SCG-19-R at MHB-72)?

Utilities Response 24:

SoCalGas objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure as it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is likely reasonably calculated to lead to the discovery of admissible evidence, and on the grounds that the burden, expense and intrusiveness of this request outweighs the likelihood that the information sought will lead to the discovery of admissible evidence.   Subject to and without waiving the foregoing objection, SoCalGas responds as follows:

SoCalGas does not have a tracking mechanism to capture total annual costs for ongoing application testing.

25. What is the estimated annual cost for ongoing application testing of the proposed upgraded CIS?

Utilities Response 25:

SoCalGas is currently in the process of assessing technology options for an upgraded CIS front-end. Estimates of annual costs for ongoing application testing are not available.

26. What is the cost and time required to have a software image individually distributed to workstations under the current CIS? (SCG-26-CWP at 175).

Utilities Response 26:

We don't track the software distribution cost or time components at this level of detail.

27. What is the estimated cost to have a single image posted to a small number of dedicated servers under the proposed upgraded CIS? (SCG-26-CWP at 175).

Utilities Response 27:

SoCalGas objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure as it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is likely reasonably calculated to lead to the discovery of admissible evidence, and on the grounds that the burden, expense and intrusiveness of this request outweighs the likelihood that the information sought will lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objection, SoCalGas responds as follows:

We are in the assessment stage and are unable to provide a cost estimate at this time.

28. Under the proposed upgraded CIS, what is the estimated cost to purchase and annual cost to maintain the dedicated servers that would be used?

Utilities Response 28:

SoCalGas is currently in the process of assessing technology options for the proposed upgraded CIS servers. Estimates of the purchase costs and annual mantainance costs are not yet available.

29. The "Description" section of the workpaper sub details for the Workpaper Group 00774Y (SCG-26-CWP at 178-179) states only "See workpaper description". Please explain what workpaper descriptions are being referred to, which provide information on the forecast estimates.

Utilities Response 29:

The workpaper description is on the pages 174-175.